Installation Checklist – HP ProLiant Cluster F200 for RA4100 using Microsoft Windows Server 2003, Enterprise Edition

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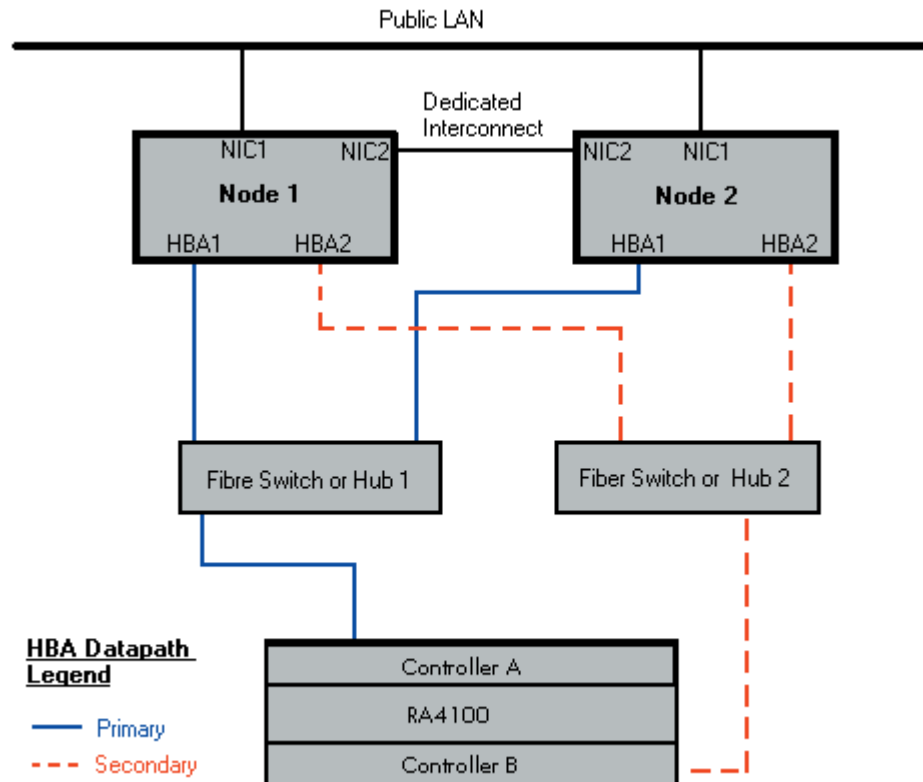
ProLiant Cluster F200 for RA4100

The ProLiant Cluster F200 uses HP's industry-leading ProLiant servers, StorageWorks RAID Array 4100, Ethernet server to server interconnect, and HP's industry-leading installation and systems management utilities. The ProLiant Cluster F200 offers redundant FCAs, fabrics and array controllers for a fully redundant storage configuration ensuring "always on" operations of your business critical applications. Key features are:

- Flexibility to create and deploy industry-standard, fibre channel clustered solution with the latest, industry-standard ProLiant and StorageWorks platforms.
- Unified suite of cluster management tools offer superior management capabilities to simplify the installation of complex cluster configurations and assure consistent availability.

This checklist provides step-by-step ProLiant Cluster F200 for RA4100 operating system installation and cluster configuration directions using Microsoft Windows Server 2003, Enterprise Edition.

Hardware Cabling Scheme

Note: This diagram depicts a two-node cluster. With Microsoft Windows Server 2003, Enterprise Edition, HP only supports two nodes in a RA4100 ProLiant Cluster.

Introduction

Microsoft Windows Server 2003, Enterprise Edition is an extension of the Microsoft Windows 2000 operating system environment developed to enhance the customer experience and to improve the overall usability and deployment.

General cluster improvements for Microsoft Windows Server 2003, Enterprise Edition include:

- **Larger cluster sizes** – Enterprise Edition now supports up to 8 nodes.
- **Enhanced cluster installation wizard** – built-in validation and verification function to help ensure base components are ready to be clustered.
- **Installation** – cluster binaries are automatically copied during the operating system installation.
- **Multi-node addition** – multiple nodes can be added in a single operation instead of one by one.
- **Active Directory integration** – tighter integration including a "virtual" computer object, Kerberos authentication, and a default location for services to publish service control points. Users can access the virtual server just like any other Windows server.

Software and Hardware Requirements

The following table provides a checklist of the required software versions and, if applicable, any items to execute before beginning the installation. Place a checkmark (✓) in the box after completing each step.

✓	Software and Hardware Requirements
☐	Before installing your HP ProLiant F200 for RA4100 cluster solution, it is very important to refer to the HP Cluster Configuration Support website for details on components that make up a valid cluster configuration. There is a support matrix for each HP Cluster that details components that represent quality tested and supported HP Cluster configurations. Using the link below, select the appropriate operating system and storage platform and then refer to the row of deliverables that are relevant to the configuration you require. The HP Cluster Configuration Support website link can be found at: http://h18000.www1.hp.com/solutions/enterprise/highavailability/microsoft/haf200/index.html
☐	SmartStart CD
☐	Two supported ProLiant Servers, supported fibre channel adapters, two or more supported network adapters, two supported fibre channel switches or hubs, and one or more RA4100s.
☐	Review and understand any Read This First (RTF) and Getting Started cards that were shipped with the product.
☐	Microsoft Windows Server 2003, Enterprise Edition software and documentation
☐	Array Configuration Utility (ACU), which is located on SmartStart CD
☐	Insight Manager (optional)
☐	RA4100 controller firmware
☐	Fibre Channel switch firmware (if applicable)
☐	HP StorageWorks Secure Path for Windows (Included in the ProLiant Cluster F200 for Entry Level SAN Cluster Kit)
☐	Sufficient software rights to install the operating system and software applications on each node.
☐	Ensure all hardware is installed and properly cabled as shown in **Figure 1** - hardware cabling scheme on page 3.
☐	Install the NICs for the private network (cluster heartbeat interconnect) and the public network in each cluster node.
☐	Install the FCAs in each cluster node.
☐	Cable the private NIC in each cluster node. You may use the Ethernet Crossover cable included in your cluster kit if desired.
☐	Cable the FCAs to the switches or hubs in each cluster node.
☐	Cable the RA4100 storage subsystem(s) to the switches or hubs.
☐	Cable the LAN using an Ethernet cable from the public NIC in each cluster node to the public LAN switch or hub.

Gathering Information

The following table provides a checklist for the required input parameters that will facilitate the operating system and cluster installation. Write the information in the values column next to each item. Place a checkmark **(✓)** in the box after completing each step.

✓	Item	Values	
☐	Name for each node:	Node 1:	Node 2:
☐	Public network connection IP address and subnet mask for each node:	Node 1	Node 2
		IP address: Subnet mask:	IP address: Subnet mask:
☐	Private network connection (cluster heartbeat) IP address and subnet mask for each node:	Node 1	Node 2
		IP address: Subnet mask:	IP address: Subnet mask:
☐	WWID, slot number, and bus of each FCA for each node:	Node 1	Node 2
		FCA 1 WWID: FCA 1 slot and bus: FCA 2 WWID: FCA 2 slot and bus:	FCA 1 WWID: FCA 1 slot and bus: FCA 2 WWID: FCA 2 slot and bus:
☐	Cluster name:		
☐	Cluster IP address and subnet mask:	IP address: Subnet mask:	
☐	Default gateway address:	IP address:	
☐	WINS server address:	IP address:	
☐	DNS address:	IP address:	
☐	Local machine Administrator password (used during OS installation):	Know the Administrator password	
☐	Domain name:		
☐	Domain administrator user name and password (used during OS installation to have the machine join the domain):	Know the user name and password	
☐	Domain account name and password for cluster service (this account has special privileges on each cluster node):	Know the user name and password	

Installing Node 1 Operating System

The following table provides a checklist of the operating system installation steps for Node 1. Place a checkmark (✓) in the box after completing each step.

✓	Installing Node 1 Operating System
☐	Power on the switch or fibre channel hub. After powering on, wait until the unit's startup completes; this may take a few minutes.
☐	Power on the shared storage. After powering on, wait until the storage system's startup completes; this may take up to two minutes.
☐	Power on and boot Node 1 with the SmartStart CD in the CD-ROM drive.
☐	Configure the cluster node using the SmartStart CD. Select Microsoft Windows Server 2003, Enterprise Edition as the operating system and follow the SmartStart on-screen instructions and prompts. After the OS installation is complete, SmartStart will automatically install the latest HP support software.
☐	Each cluster node requires at least two network adapters—one to connect to a public network and one to connect to a private network. For the public network connection: If the network adapter can transmit at multiple speeds, then manually specify a speed and duplex mode. The speed for the network adapter should be hard set (manually set) to be the same on all nodes according to the card manufacturer's specification. **Best Practice:** To provide a maximum level of redundancy, use NIC Teaming capabilities for selected HP network products to provide a redundant public network connection. Please note, however, that NIC Teaming is unsupported for the private network connection.
☐	Configure the TCP/IP settings for the public network connection.
☐	For the private network connection: To eliminate possible private network cluster communication issues refer to Microsoft Knowledge Base (KB) article EN-US258750 to properly setup the private network. http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750
☐	Configure the TCP/IP settings for the private network connection.
☐	Join the Windows domain and reboot when prompted.
☐	After the reboot, log into the domain.
☐	Install the HP StorageWorks Secure Path Server software. 1. Insert the Secure Path CD to automatically start the Secure Path installation process. Alternatively, double-click the following file on the CD: <CD-ROM drive>:\Launch.exe. During the installation, you will be prompted to configure your clients. Refer to the Secure Path documentation for further details. 2. Remove the HP StorageWorks Secure Path CD from the CD-ROM drive. 3. Reboot the node when prompted.
☐	Install Secure Path Client on a monitor node. To use Secure Path, install the client on a machine designated as a monitor node that is connected to the same domain as the cluster. **Note:** A Cluster node may also be the Monitor node if desired.
☐	From the desktop of Node 1: Select **Start → Programs → Compaq System Tools → hp Array Configuration Utility → hp Array Configuration Utility**. **Note:** A refresh may be needed to start ACU if security settings were set. Also, the Internet Connection Wizard pop-up screen may appear. Internet Explorer must be configured appropriately in order to use the HP Array Configuration Utility. Also, be sure to read the security alert pop-up screen. The Internet Explorer security level may need to be modified in order to use ACU.

☐ Select the method you would like to use to configure your controller. Refer to the user guide for the Array Configuration Utility for more details.

☐ Configure the shared storage drives.

IMPORTANT: Create a logical drive using ACU on one of the RA4100 arrays with at least 510MB of space. Microsoft recommends at least 500MB for the cluster quorum drive. The extra space for the logical drive size specified in ACU is to account for internal disk size calculations used by ACU. Specifying 510MB will ensure that the size of this disk will be at least 500MB of formatted drive space for use as the quorum drive. Refer to Microsoft Knowledge Base Article – 280345 located at http://support.microsoft.com/default.aspx?scid=kb;en-us;280345 or the help documentation on the cluster node for more information on cluster disk sizes.

☐ After the shared storage drives are configured:

Select **Start → Programs → Administrative Tools → Computer Management**. Then select **Disk Management** to create volumes out of the logical drives.

Note: Do not upgrade the logical drives from Basic to Dynamic. Microsoft Cluster Services does not support dynamic disks.

☐ Be sure to assign drive letters and format the volumes as NTFS.

☐ Close **Disk Management** for Microsoft Windows Server 2003, Enterprise Edition.

☐ Reboot Node 1 to complete the discovery of all of the disks drives.

Note: In a large LUN configuration, this additional reboot may be needed to fully discover all of the drives. Accessing the Device Manager and displaying the "Show Hidden Devices" can be used to verify the LUN discovery has completed.

☐ Log into Node 1 and wait for Plug-N-Play (PNP) to complete the discovery of all of the drives.

☐ Select **Start → Programs → Administrative Tools → Cluster Administrator**.

☐ Select **Create New Cluster** from the **Action** drop-down box. Click **OK**.

☐ Click **Next** on the welcome screen.

☐ Select the domain to create the cluster in and enter a name for the cluster. Click **Next**.

☐ Enter the name of the first server to be in the cluster. Click **Next**.

☐ When the cluster wizard finishes analyzing the configuration, click **Next**.

☐ Enter the IP address for the cluster. Click **Next**.

☐ Enter the username and password for the cluster. Click **Next**.

☐ Verify the proposed cluster configuration. Click **Next**.

☐ When the wizard has finished creating the cluster, click **Next,** and then click **Finish**.

☐ Select **Start → Settings → Control Panel → HP Management Agents**. In the list of **Inactive Agents,** select **Clustering Information** and click **Add** to move this agent to the list of active agents and click **OK**.

☐ Restart the agents when prompted.

Installing Node 2 Operating System

The following table provides a checklist of the operating system installation steps for Node 2. Place a checkmark **(✓)** in the box after completing each step.

Note: A maximum of 2 cluster nodes is supported under Microsoft Windows Server 2003, Enterprise Edition for the RA4100.

✓	Installing Node 2 Operating System
☐	Power on and boot Node 2 with the SmartStart CD in the CD-ROM drive.
☐	Configure the cluster node using the SmartStart CD. Select Microsoft Windows Server 2003, Enterprise Edition as the operating system and follow the SmartStart on-screen instructions and prompts. After the OS installation is complete, SmartStart will automatically install the latest HP support software.
☐	Each cluster node requires at least two network adapters—one to connect to a public network and one to connect to a private network. For the public network connection: If the network adapter can transmit at multiple speeds, then manually specify a speed and duplex mode. The speed for the network adapter should be hard set (manually set) to be the same on all nodes according to the card manufacturer's specification. **Best Practice:** To provide a maximum level of redundancy, use NIC Teaming capabilities for selected HP network products to provide a redundant public network connection. Please note, however, that NIC Teaming is unsupported for the private network connection.
☐	Configure the TCP/IP settings for the public network connection.
☐	For the private network connection: To eliminate possible private network cluster communication issues refer to Microsoft Knowledge Base (KB) article **EN-US258750** to properly setup the private network. http://support.microsoft.com/default.aspx?scid=kb;EN-US;258750
☐	Configure the TCP/IP settings for the private network connection.
☐	Join the Windows domain and reboot when prompted.
☐	After the reboot, log the machine into the domain.
☐	Install the HP StorageWorks Secure Path Server software. 1. Insert the Secure Path CD to automatically start the Secure Path installation process. Alternatively, double-click the following file on the CD: <CD-ROM drive>:\Launch.exe. During the installation, you will be prompted to configure your clients. Refer to the Secure Path documentation for further details. 2. Remove the HP StorageWorks Secure Path CD from the CD-ROM drive. 3. Reboot the node when prompted.
☐	Log into Node 2 and wait for Plug-N-Play (PNP) to complete the discovery of all of the drives.
☐	Reboot Node 2 to complete the discovery of all of the disks drives. **Note:** In a large LUN configuration, this additional reboot may be needed to fully discover all of the drives. Accessing the Device Manager and displaying the "Show Hidden Devices" can be used to verify the LUN discovery has completed.
☐	From Node 2, select **Start→ Programs→ Administrative Tools→ Cluster Administrator**.
☐	Select **Add nodes to cluster** from the **Action** drop-down box. Enter the name of the cluster to join and click **OK**.
☐	Click **Next** on the welcome screen.
☐	Enter the name of the server that you want to join the cluster, click **Add** and then click **Next**.
☐	When the cluster wizard finishes analyzing the configuration, click **Next**.
☐	Enter the password for the cluster. Click **Next**.
☐	Verify the proposed cluster configuration. Click **Next**.
☐	When the wizard has finished adding the node to the cluster, click **Next,** and then click **Finish**.
☐	Select **Start → Settings → Control Panel → HP Management Agents**. In the list of **Inactive Agents,** select **Clustering Information** and click **Add** to move this agent to the list of active agents, and then click **OK**.
☐	Restart the agents when prompted.

Validating the Cluster

To validate the cluster installation, perform the following steps from any cluster node. Place a checkmark (✓) in the box after completing each step.

✓	Validating the Cluster
☐	From the desktop of any node: Select **Start → Programs → Administrative Tools → Cluster Administrator**, and connect to the cluster.
☐	Right click on one of the cluster groups and select **Move Group**.
☐	Verify the group fails over and all resources come online.
☐	Right click on the same cluster group and select **Move Group**.
☐	Verify that the group fails over and all resources come online.
☐	Repeat the **validating the cluster** steps, if desired, for each group.

The installation is now complete.

For more Information

To learn more about HP High Availability and ProLiant Clusters visit the following Web site:
http://www.hp.com/servers/proliant/highavailability.

Feedback

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